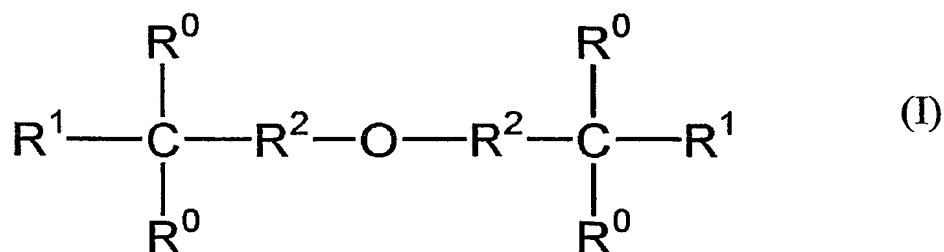


What is claimed is:

1. A polymer represented by formula ( I ):



wherein  $\text{R}^0$  is  $-\text{CH}_2\text{O}-[\text{CO}-(\text{CH}_2)_n-\text{O}]_m-\text{X}$ ,  $-\text{CH}_2\text{O}-[\text{CH}_2\text{O}]_{3m}-\text{X}$ ,  $-\text{CH}_2\text{O}-[(\text{CH}_2)_n-\text{O}]_m-\text{X}$  or  $-\text{CH}_2\text{O}-[\text{CONH}-(\text{CH}_2)_n]_m-\text{X}$ ;

$\text{X}$  is  $\text{SiR}^3_k(\text{OR}^4)_{3-k}$ ;

$\text{R}^1$  is  $\text{C}_{1-5}$  alkyl or  $\text{R}^0$ ;

$\text{R}^2$  is  $\text{C}_{1-4}$  alkylene or arylene;

$\text{R}^3$  and  $\text{R}^4$  are each independently  $\text{C}_{1-5}$  alkyl; and

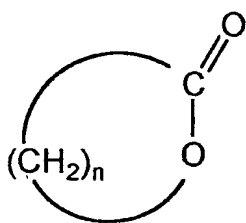
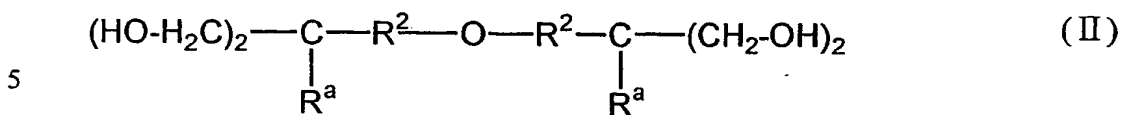
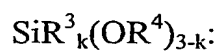
$n$  is an integer in the range of 2 to 5,  $m$  is an integer in the range of 2 to 20 and  $k$  is an integer in the range of 0 to 2.

2. The polymer of claim 1, wherein  $\text{R}^2$  is  $\text{CH}_2$ .

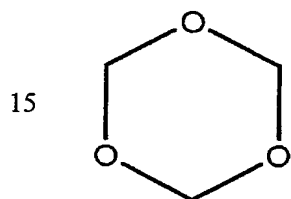
3. The polymer of claim 2, wherein  $\text{R}^0$  is  $-\text{CH}_2\text{O}-[\text{CO}-(\text{CH}_2)_5-\text{O}]_m-\text{X}$ .

4. The polymer according to claim 1, wherein the weight averaged molecular weight (Mw) of the polymer is in the range of 500 to 20,000.

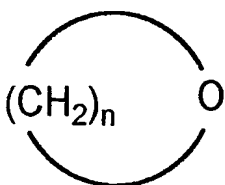
5. A method of preparing the polymer represented by formula ( I ) of claim 1, comprising conducting a ring open polymerization of a cyclic monomer selected from the compounds of formula (III) to (VI) and a polyhydric alcohol of formula (II), and reacting the resulting polymer with a silane compound represented by



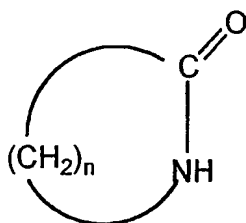
(III)



(IV)



(V)



(VI)

wherein  $\text{R}^a$  is  $\text{C}_{1-5}$  alkyl or  $\text{CH}_2\text{OH}$ ;

30  $\text{R}^2$  is  $\text{C}_{1-4}$  alkylene or arylene; and

n is an integer in the range of 2 to 5.

6. The method according to claim 5, wherein the polyhydric alcohol is di(trimethylolpropane), di(pentaerythritol) or a derivative thereof.

5

7. The method according to claim 5, wherein the cyclic monomer is a compound of formula (III).

8. The method according to claim 5, wherein the silane compound is selected from the group consisting of 3-isocyanatopropyl triethoxy silane, 3-glycidoxyp  
10 the group consisting of 3-isocyanatopropyl triethoxy silane, 3-glycidoxyp  
dimethylethoxy silane, 3-glycidoxyp  
methyltriethoxy silane and 3-  
glycidoxyp  
methylmethoxy silane, and a mixture thereof.

9. A method of preparing a polymer composite film of a low dielectric constant  
15 containing nano pores, which comprises conducting a sol-gel reaction between a  
polymer of claim 1 and a silicate polymer, followed by thermal decomposition of  
the resulting polymer.

10. The method according to claim 9, wherein the silicate polymer is  
20 methylsilsesquioxane, ethylsilsesquioxane or hydrogensilsesquioxane.

11. The method according to claim 10, wherein the silicate polymer is obtained by  
conducting a sol-gel reaction between one or more monomers selected from the  
group consisting of trichloroethane, methyltrimethoxysilane,  
25 methyltriethoxysilane, methylmethoxysilane, ethyltriethoxysilane,  
ethyltrimethoxysilane, ethyldiethoxysilane, ethylmethoxysilane,  
bistrimethoxysilyl ethane, bistrimethoxysilyl ethane, bistrimethoxysilyl methane,  
bistrimethoxysilyl octane and bistrimethoxysilyl hexane.

12. The method according to claim 9, wherein the mixing ratio by weight of the  
30

polymer of claim 1 and the silicate polymer ranges from 1:99 to 50:50.

13. The method according to claim 9, wherein the thermal decomposition is carried out at a temperature ranging from 200 to 500°C under an inert gas  
5 atmosphere or vacuum.